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February 20, 2008

David Saliwanchik

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AMENDMENT UNDER 37 CFR §1.111
Examining Group 1623
Patent Application
Docket No. SPO-120

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Examiner	:	Eric S. Olson
Art Unit	:	1623
Applicants	:	Tadao Saito, Haruki Kitazawa
Serial No.	:	10/522,047
Filed	:	January 19, 2005
Conf. No.	:	9241
For	:	Phosphorylated Dextrans

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

AMENDMENT UNDER 37 CFR §1.111

Sir:

An extension of time, through and including February 21, 2008, is being authorized with the electronic filing of this paper.

In response to the Office Action dated September 21, 2007, please amend the above-referenced application as follows:

Amendments to the Specification begin on page 2 of this paper.

Amendments to the Claims are reflected in the listing of claims beginning on page 3 of this paper.

Remarks follow the amendment sections of this paper.

In the Specification

Please amend the paragraph at Page 4, lines 32-34 as follows:

(11) A method for producing a phosphorylated dextran, which comprises the step of reacting a dextran with polyphosphoric acid in a ~~formaldehyde~~ formamide solution.

Please amend the paragraph at Page 9, line 35-Page 10, line 12 as follows:

The present invention also provides methods for producing phosphorylated dextrans, which comprise a step of reacting dextrans with polyphosphoric acid in ~~formaldehyde~~ formamide. The above-described methods for producing phosphorylated dextrans of the present invention are methods that partially modify the conventional methods previously described. Suzuki *et al.* synthesized a phosphorylated dextran by introducing phosphate groups into a dextran (molecular weight of 38,000) by reaction with polyphosphoric acid in formamide solution. The advantages of the methods of the present invention over the conventional methods of Suzuki *et al.* include (1) the yield is increased by 30% compared with conventional methods; (2) dextrans with a molecular weight of 100,000 or more, which conventional methods could not phosphorylate, can be phosphorylated; and (3) almost all hydroxyl groups at position six can be phosphorylated by the present methods, while only half were phosphorylated by the previous methods.

Please amend the paragraph at Page 11, line 28-32 as follows:

Fig. 1 is a graph showing the results of anion exchange chromatography of the phosphorylated dextrans at each phosphorylation reaction time. Phosphorylated dextrans were prepared by the heated reaction of dextrans with polyphosphoric acid in a ~~formaldehyde~~ formamide solution.

In the Claims

This listing of claims will replace all prior versions and listings of claims in this application.

1 – 6 (Cancelled).

7 (Original). A method for immunopotentiating a cell, which comprises the step of contacting the cell with a phosphorylated dextran.

8 (Original). The method of claim 7, wherein the immunopotentiation is blastogenesis.

9 (Original). The method of claim 7, wherein the immunopotentiation is the induction of interferon γ (IFN-γ) or interleukin 10 (IL-10).

10 (Previously presented). The method of claim 7, wherein the cells are derived from spleen cells or dendritic cells.

11 (Currently amended). A method for producing a phosphorylated dextran, which comprises the step of reacting a dextran with polyphosphoric acid in a ~~formaldehyde~~ formamide solution.

12 (Original). The method of claim 11, wherein a dextran and polyphosphoric acid are reacted under heat.

13 - 14 (Cancelled).

15 (Previously presented). The method of claim 8, wherein the cells are derived from spleen cells or dendritic cells.

16 (Previously presented). The method of claim 9, wherein the cells are derived from spleen cells or dendritic cells.

17 (New). A method for treating or preventing an infectious disease, colitis, or an allergic disease in a subject in need thereof comprising the step of administering an effective amount of a pharmaceutical composition comprising a phosphorylated dextran as an active ingredient and a pharmaceutical carrier.

18 (New). The method of claim 17, wherein the allergic disease is selected from the group consisting of allergic rhinitis, allergic conjunctivitis, bronchial asthma, atopic dermatitis, intestinal allergies, and anaphylactic shock.

Remarks

Claims 1-16 were pending in the subject application. By this Amendment, the applicants have cancelled claims 1-6, 13 and 14, and have added new claims 17 and 18. Support for new claims 17 and 18 can be found throughout the subject specification. The applicants have also amended claim 11 and the specification consistent with the Examiner's observations in the outstanding Office Action. No new matter has been added by these Amendments. Entry and consideration of the amendments presented herein is respectfully requested. Accordingly, claims 7-12 and 15-18 are currently before the Examiner. Favorable consideration of the pending claims is respectfully requested.

The amendments and claim cancellations set forth herein have been made in an effort to lend greater clarity to the claimed subject matter and to expedite prosecution. These amendments should not be taken to indicate the applicants' agreement with, or acquiescence to, the rejections of record. Favorable consideration of the claims now presented, in view of the remarks and amendments set forth herein, is earnestly solicited.

The Office Action included an initialed copy of the Information Disclosure Statement that was submitted to the Patent Office on October 24, 2005; however, the R8 reference was not initialed. The Examiner has confirmed by telephone that this reference was considered and that the record will be updated to reflect this.

Claims 11 and 12 have been rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the enablement requirement. The applicants respectfully request reconsideration of this rejection in view of the amendments to the claims and specification as set forth herein.

The Examiner correctly noted in the Office Action that the appearance of the word "formaldehyde" in the claims and specification was clearly a clerical error and was intended to be "formamide." By this Amendment, the applicants have amended the word "formaldehyde" to "formamide" in the specification and claim 11. Claim 12 depends from claim 11 and has not been amended *per se*, as the objectionable aspect of claim 12 has been addressed by the amendment of claim 11. The applicants thank the Examiner for his careful review of the application. Accordingly, reconsideration and withdrawal of the rejection under 35 U.S.C. §112, first paragraph, is respectfully requested.

Claims 1-11 and 13-16 have been rejected under 35 U.S.C. §102(b) as being anticipated by Suzuki *et al.* (Cancer Research, Vol. 37, pp. 3448-3454, 1977), hereinafter referred to as Suzuki 1. The applicants respectfully traverse this ground for rejection because the cited reference does not disclose the applicants' unique and advantageous methods as claimed herein.

It is a basic premise of patent law that, in order to anticipate, a single prior art reference must disclose within its four corners, each and every element of the claimed invention. In *Lindemann v. American Hoist and Derrick Co.*, 221 USPQ 481 (Fed. Cir. 1984), the court stated:

> Anticipation requires the presence in a single prior art reference, disclosure of each and every element of the claimed invention, arranged as in the claim. *Connell v. Sears Roebuck and Co.*, 722 F.2d 1542, 220 USPQ 193 (Fed. Cir. 1983); *SSIH Equip. S.A. v. USITC*, 718 F.2d 365, 216 USPQ 678 (Fed. Cir. 1983). In deciding the issue of anticipation, the [examiner] must identify the elements of the claims, determine their meaning in light of the specification and prosecution history, and identify corresponding elements disclosed in the allegedly anticipating reference. *SSIH, supra*; *Kalman [v. Kimberly-Clarke*, 713 F.2d 760, 218 USPQ 781 (Fed. Cir. 1983)] (emphasis added). 221 USPQ at 485.

The Suzuki 1 reference discloses that dextran phosphate did not inhibit the growth of the Ehrlich solid tumor (Summary at page 3448 and page 3449, right column, 3rd paragraph). In contrast, the present application clearly demonstrates that the phosphorylated dextrans of the instant invention significantly induce blastogenic activity (see, e.g., Examples 5, 6, and 9).

Thus, the applicants' claims are based on the surprising discovery of the immunopotentiating activity of phosphorylated dextrans. The applicants' claims require this activity, which is not disclosed or suggested by the cited reference.

The applicant respectfully points out that for a claim to be anticipated under the principles of inherency, the subject of a single prior art reference must necessarily function in accordance with the limitations of the process or method claimed. *In re King*, 801 F2d 1324, 1326, 231 USPQ 136, 138 (Fed. Cir. 1986). Further,

> the doctrine of inherency is available only when the prior inherent event can be established as a certainty. That an event may result from a given set of circumstances is not sufficient to establish anticipation. . . . A prior inherent event cannot be established based on speculation, or where a doubt exists (emphasis added). *Ethyl Molded Product Co. v. Betts Package Inc.*, 9 USPQ 2d 1001, 1032-33 (E.D. KY 1988).

In the current case, the Suzuki 1 reference does not disclose, explicitly or inherently, the advantageous methods claimed by the current applicant. Therefore, the applicants respectfully request reconsideration and withdrawal of the rejection under 35 U.S.C. §102(b) based on Suzuki 1.

Claims 1-4, 11, and 12 have been rejected under 35 U.S.C. §103(a) as being obvious over Suzuki *et al.* (Carbohydrate Research, Vol. 53, No. 2, pp. 223-229, 1977, hereinafter referred to as Suzuki 2), in view of Sacco *et al.* (Carbohydrate Research, Vol. 184, pp. 193-202, 1988). The applicants respectfully traverse this ground for rejection because the cited references, either taken alone or in combination, do not disclose or suggest the claimed methods.

Please note that claims 1-4 have been cancelled herein, thereby rendering moot this ground for rejection as it relates to those claims.

In direct contrast to the current invention, the Suzuki 2 reference discloses that dextran phosphates are practically inactive in the inhibition of sarcoma 180 ascites-tumor (page 226, 2nd paragraph). Thus, there is no disclosure or even suggestion of the unique biological activity that is the basis of the current invention.

It has been well established in the patent law that the mere fact that the purported prior art could have been modified or applied in some manner to yield applicant's invention does not make the modification or application obvious unless the prior art suggested the desirability of the modification. *In re Gordon*, 221 USPQ 1125,1127 (Fed. Cir. 1984). Moreover, as expressed by the CAFC, to support a §103 rejection, "[b]oth the suggestion and the expectation of success must be founded in the prior art ..." *In re Dow Chemical Co.* 5 USPQ 2d 1529, 1531 (Fed. Cir. 1988).

The cited references do not disclose or suggest the advantageous method of the current invention. Therefore, the applicants respectfully request reconsideration and withdrawal of the rejection under 35 U.S.C. §103 based on Suzuki 2 in view of Sacco *et al.*

Claims 1-4, 11, and 12 have been rejected under 35 U.S.C. §103(a) as being obvious over Japanese Patent Application 52028583, hereinafter referred to as the '583 application. The applicants respectfully traverse this ground for rejection because the cited reference does not disclose or suggest the applicants' advantageous methods.

Please note that claims 1-4 have been cancelled herein, thereby rendering moot this ground for rejection as it relates to those claims. As with the Suzuki reference discussed above, the '583 application does not disclose or suggest the unique methods of the subject invention.

An assertion of obviousness without the required suggestion or expectation of success in the prior art is tantamount to using applicants' disclosure to reconstruct the prior art to arrive at the subject invention. Hindsight reconstruction of the prior art cannot support a §103 rejection, as was specifically recognized by the CCPA in *In re Sponnoble*, 56 CCPA 823, 160 USPQ 237, 243 (1969):

> The Court must be ever alert not to read obviousness into an invention on the basis of the applicant's own statements; that is we must review the prior art without reading into that art appellant's teachings. *In re Murray*, 46 CCPA 905, 268 F.2d 226, 112 USPQ 364 (1959); *In re Sprock*, 49 CCPA 1039, 301 F.2d 686, 133 USPQ 360 (1962). The issue, then, is whether the teachings of the prior art would, in and of themselves and without the benefits of appellant's disclosure, make the invention as a whole, obvious. *In re Leonor*, 55 CCPA 1198, 395 F.2d 801, 158 USPQ 20 (1968). (Emphasis in original)

The cited reference does not disclose or suggest the advantageous methods of the current invention, which are based on the surprising immunopotentiating activity of the phosphorylated dextrans. The applicants respectfully submit that it is only the applicants' own teachings that provide the claimed methods. Therefore, the applicants respectfully request reconsideration and withdrawal of the rejection under 35 U.S.C. §103 based on the '583 application.

In view of the foregoing remarks and the amendments to the claims, the applicants believe that the currently pending claims are in condition for allowance, and such action is respectfully requested.

The Commissioner is hereby authorized to charge any fees under 37 CFR §§1.16 or 1.17 as required by this paper to Deposit Account No. 19-0065.

The applicants invite the Examiner to call the undersigned if clarification is needed on any of this response, or if the Examiner believes a telephonic interview would expedite the prosecution of the subject application to completion.

Respectfully submitted,

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